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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,087	08/16/2006	Yasuo Yatsugake	33082M288	2893

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SMITH, GAMBRELL & RUSSELL
1130 CONNECTICUT AVENUE, N.W., SUITE 1130
WASHINGTON, DC 20036

EXAMINER	
SUAREZ, FELIX E	

ART UNIT	PAPER NUMBER
2857	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,087	YATSUGAKE ET AL.	
	Examiner	Art Unit	
	FELIX E. SUAREZ	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *16August2006, 21October2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because:

In FIG. 6, and 8-19, blocks are not labeled.

Correction is required. See MPEP 608.02 and 37 CFR §§ 1.84(n) and (o).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being unpatentable over Nishiyama et al. (U.S. Patent No. 6,597,448).

With respect to claim 1, Nishiyama et al. (hereafter Nishiyama) teaches a semiconductor device manufacturing system, comprising:

a semiconductor device manufacturing apparatus (see col. 1, lines 35-42, conventionally, in a fabrication line of a wafer, or a substrate for forming a thin film);

a particle detecting part that detects particles adhered to a substrate which has been subjected to a predetermined treatment by the semiconductor device manufacturing apparatus (see col. 1, lines 54-61, method of inspecting a foreign particle or a defect on a sample and a system thereof capable of carrying out inspection in accordance with the size of a foreign particle or a size of a defect);

an evaluation data creating part that creates evaluation data for evaluating a state of particle adhesion based on a detection result of the particle detecting part (see col. 1, lines 59-61, providing failure analysis of an object such as a semiconductor wafer or a substrate for forming a thin film);

a storage part that stores previously created correspondence data relating to a correspondence between the evaluation data and causes of particle adhesion to the substrate (see col. 4, lines 49-55; and FIG. 2, the data server 1302 is a computer capable of collecting and storing inspection data of the foreign particle inspection apparatus1301); and

a determining part that determines a cause of particle adhesion to the substrate based on the evaluation data created by the evaluation data creating part and the correspondence data stored in the storage part (see col. 6, lines 51-54, an example of an image processed by the signal processing circuit 105 in the presence of a foreign particle and foreign particle data 201 is present at a central portion of the image).

With respect to claim 2, Nishiyama further teaches, wherein:

the particle detecting part is configured to output, as the detection result, data in which representative values each representing a state of particle adhesion in each of detection unit areas are correlated to addresses of the respective detection unit areas, the detection unit areas being defined by dividing a surface of the substrate (see col. 6, lines 57-62, FIG. 3(b) represents FIG. 3(a) three-dimensionally, x, and y axes are coordinate axes for determining a position in the image and z axis is plotted with a signal intensity);

the evaluation data is data in which evaluation values each representing the state of particle adhesion in each of evaluation areas are correlated with addresses of the respective evaluation areas, the evaluation areas being defined by dividing a surface of the substrate (see col. 6, lines 57-62, FIG. 3(b) represents FIG. 3(a) three-dimensionally, x, and y axes are coordinate axes for determining a position in the image and z axis is plotted with a signal intensity); and

each of the evaluation areas includes a plurality of detection unit areas, and each of the evaluation values is an output of a function to which the representative values of the plurality of detection unit areas included in the evaluation area are applied (see col. 10, lines 31-39; and FIGS. 5(b), 5(c), an example of a distribution of occurrence of a foreign particles when the system is abnormal, in addition to the foreign particles under stationary state indicated by the area 401, many of large foreign particles as indicated by an area 402 occurs).

With respect to claim 3, Nishiyama further teaches, wherein

each of the evaluation values corresponds to a size (see col. 10, lines 28-30, sizes of foreign particles concentrate at portion) and/or the number of particles existing in the detection unit areas included in the evaluation area (see col. 10, lines 31-39; and FIGS. 5(b), 5(c), an example of a distribution of occurrence of a foreign particles when the system is abnormal, in addition to the foreign particles under stationary state indicated by the area 401, many of large foreign particles as indicated by an area 402 occurs).

With respect to claim 4, Nishiyama further teaches, wherein

each of the evaluation values is expressed as binarized data (see col. 4, lines 6-10, an input signal is binarized).

With respect to claim 5, Nishiyama further teaches, wherein

each of the evaluation values expressed as binarized data is determined based on a fact that the number of particles existing in the detection unit areas included in the evaluation area is larger, or not larger than a predetermined reference value (see col.4, lines 6-10, a signal equal to or larger than a binarized threshold).

With respect to claim 6, Nishiyama further teaches, wherein

the evaluation data creating part is configured to create evaluation data with respect to only a part or parts of a surface of the substrate (see col. 10, lines

31-39; and FIGS. 5(b), 5(c), an example of a distribution of occurrence of a foreign particles when the system is abnormal, in addition to the foreign particles under stationary state indicated by the area 401, many of large foreign particles as indicated by an area 402 occurs).

With respect to claim 7, Nishiyama further teaches, wherein

the evaluation data creating part is configured to create evaluation data based on a comparison between a detection result obtained before a substrate is subjected to a predetermined treatment by the semiconductor device manufacturing apparatus, and a detection result obtained after the substrate has been subjected to the predetermined treatment (see col. 1, lines 24-26, comparing a result of detection with what that of a wafer of the same kind inspected immediately before the detection).

With respect to claim 8, Nishiyama further teaches, comprising:

a display part that displays the cause of particle adhesion to the substrate determined by the determining part (see col. 3, lines 50-51; and FIG. 1, a result of the detection is displayed on the data display unit 106).

With respect to claim 9, Nishiyama further teaches, comprising:

means for outputting a control signal to the semiconductor device manufacturing apparatus based on the cause of particle adhesion to the

substrate determined by the determining part (see col. 4, lines 24-27; and FIG. 1, information provided by the auto-focus light detection unit 109 is transmitted to the stage unit 107 and is used for controlling the stage).

With respect to claim 10, Nishiyama further teaches, comprising:

a particle inspecting device that inspects particles on a substrate (see col. 1, lines 54-61, method of inspecting a foreign particle or a defect on a sample and a system thereof capable of carrying out inspection in accordance with the size of a foreign particle or a size of a defect); and

a controlling part arranged separately from the particle inspecting device to control the semiconductor device manufacturing apparatus (see col. 4, lines 24-27; and FIG. 1, information provided by the auto-focus light detection unit 109 is transmitted to the stage unit 107 and is used for controlling the stage);

wherein:

the particle detecting part and the evaluation data creating part are arranged in the particle inspecting device (see col. 4, lines 58-66, after carrying out inspection by the foreign particle inspection apparatus 13012, a foreign particle which needs the countermeasure is selected by the method); and

the storage part (see col. 4, lines 49-55; and FIG. 2, the data server 1302 is a computer capable of collecting and storing inspection data of the foreign particle inspection apparatus1301) and the determining part are

arranged in the controlling part (see col. 4, lines 24-27; and FIG. 1, information provided by the auto-focus light detection unit 109 is transmitted to the stage unit 107 and is used for controlling the stage).

With respect to claim 11, Nishiyama further teaches, comprising a communicating part that sends the cause of particle adhesion to the substrate determined by the determination part to a monitoring station through a communication line (see col. 4, lines 52-55, a test result of the electric test apparatus 1304 and an analysis result of the analysis apparatus 1305 and the network 1303 is a communication network by Ethernet).

Conclusion

Prior Art

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bruinsma et al. [U.S. Patent No. 7,173,270] describes a particle detector system.

DiMarzio et al. [U.S. Patent No. 7,193,215] describes a system for imaging the surface of a substrate.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felix Suarez, whose

telephone number is (571) 272-2223. The examiner can normally be reached on weekdays from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571) 272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications.

April 23, 2008

/Felix E Suarez/

Examiner, Art Unit 2857

/Eliseo Ramos-Feliciano/
Supervisory Patent Examiner, Art Unit 2857